Slash-*and*-char system as alternative for wood waste utilization to improve land productivity : the local perspective to manage forests sustainably

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The potential of wood waste in Malinau, East Kalimantan Current veracity in the forests of the developing countries is often at par with rich ones in terms of wastefulness. Logging concessions and shifting cultivation activities have left massive swaths of devastation, which contribute to an abundance of waste. A field study was undertaken by Center for International Forestry Research (CIFOR) in collaboration with Forestry Research & Development Agengy – Ministry of Forest (FORDA-MoF) of Indonesia and Malinau district agencies to quantify the amount of wood waste from logging and land clearance activities for shifting cultivation by local communities.

The amount of wood waste from clearance was 63 m^3ha^{-1}, while the total demand for new *ladang* was 5,000 hectares per year. Thus the total wastage produced annually is 315,000 cubic meters - enough to fill 68 football fields with rubble. In line with that, wood waste from logging was abundant, with a total of 781 m^3 for every km of new logging road and 207 m^3 for each hectare of log yard opened. With recently 5 Izin Usaha Pemanfaatan Hasil Hutan Kayu (IUPHHK) concessionaires operating in Malinau, they contributed up to 22,000 m^3 of wastage annually.

The traditional process of *ladang* opening, inherited from the ancestor, pays no special attention to its waste. The fallen trees are often left to suppress the growth of scrubs and they are burned to provide ash to the soil. The opening process only provides one planting cycle for rice or maize or mixed. Most of the ash from the burning of debris will not last long; it leaches by the following rain.

Why is it important to promote slash-*and*-char in Malinau ? Malinau is a land locked area. The district is located in the upper stream of several big rivers in North East Kalimantan. Traditional agriculture is trying to increase harvest through application of fertilizer and insecticides. The price of these chemical products, however, is too high for the farmers. The introduction of slash-*and*-char will help farmers reduce their spending if charcoal and wood vinegar are applied as substitutes of fertilizer and insecticides.

CIFOR in cooperation with Malinau Government was promoting a new system to develop slash-*and*-char activities in agriculture sector, with the intention that charcoal and wood vinegar can be widely accepted by farmers in the near future through the Agricultural Extension Officers (Penyuluh Pertanian Lapangan, PPL) of the Sub-district Agricultural services.

The benefit of slash-*and*-char for shifting cultivation Charcoal application as a soil conditioner can uphold and increase the soil Cation Exchange Capacity (CEC), soil layer effective area, soil organic-C, as well as to provide more micro- and macro-pores to control soil humidity and its water balance. Another benefit from charcoal making is wood vinegar, which is good for plant growth acceleration and to prevent micro-organisms or harmful insects on crops or vegetable fields.

Switching to slash-*and*-char from the traditional slash-*and*-burn system will increase the intensity and productivity of *ladang*, the shifting cultivation of rice and maize practiced by the local communities also

would reduce the danger of forest fire - not a bad bonus in a country that has been devastated by such catastrophes in recent years. At the very least, switching to new system would reduce the demand for new *ladang* and forests opened - active participation of the local communities could support the sustainably managed forests.

This research activities was funded by
ITTO Project PD. 39/00 Rev.3(F)
Sustainable Collaborative Forest Management
Meeting the Challenges of Decentralization in Bulungan Model Forest